WHITEPAPER

Using a Revenue Grade Current Transformer for Utility Tariff Metering

Precise measurements of load currents require accurate power usage readings for the purpose of tariff metering and it is critical that properly dimensioned current transformers are used for these specific applications.

For this article, we'll outline four revenue grade current transformers designed specifically for applications that require highly accurate metering, including the JAK-0C, JAK-0S, JAB-0C, and JAB-0S window-type current transformers for utility revenue metering applications. These models have high rating factors (2.0, 3.0 and 4.0) at low ratios and a very high metering accuracy class of 0.3% or greater. A test card showing the accuracy reading is included with each unit.

JAK-0C Indoor/Outdoor Current Transformer

Intended Use
Used primarily for industrial and commercial service metering applications that require high accuracy class current transformers.

Applications
Designed for indoor or outdoor service. Suitable for operating meters and instruments on both single-phase two-wire circuits and three-phase circuits.

Construction
The core and coil assembly is encapsulated in resin within a molded case. The material has excellent electrical and mechanical properties over a wide temperature range, has low water absorption and is resistant to oil and a variety of chemicals. The core is made from high quality grain-oriented silicon steel while the secondary winding is made from heavy enameled copper wire evenly distributed around the core for maximum accuracy and resistance to stray magnetic fields.

Mounting
Low Base – Flex-Core commonly stocks the low base JAK-0C. Other mounting options (call for availability) include: no base, wide base and high base.

Primary Bus Bar Assembly Kits – These are also commonly stocked in sufficient quantities and are sold separately from the current transformers. If purchased together with the JAK-0C current transformers, Flex-core will ship these as fully assembled units.

Specifications

- Insulation level – 0.6kV, 10kV BIL
- Frequency – 60Hz
- Thermal rating factors:
  - 4.0 @30° C for ratios from 100:5A to 400:5A
  - 3.0 @30° C for ratio 500:5A
  - 2.0 @30° C for ratios 600:5A up to 1000:5A
  - 1.5 @30° C for ratios 1200:5A and 1500:5A
  - 1.0 @30° C ambient for 2000:5A ratio.
- Accuracy – 0.3%.
- Window I.D. – 100:5A ratio has window opening size of 1.5"ID while the 200:5A ratio has a 2.60"ID and the higher ratios from 300:5A up to 2000:5A have 3.062"ID window opening sizes.

Availability
Most ratios are in stock and available for immediate shipment. Ratios not in stock require a lead time - call for lead time.

Additional Options
Custom JAK-0C units rated at 25Hz – Flex-Core recently supplied a water treatment and sewage plant with models that work with their existing legacy equipment. They successfully tested at 25Hz rating.

Custom JAK-0C units rated at 50Hz with IEC metering class are also available. Contact Flex-Core for assistance.

Product Details >>

JAK-0S High Accuracy Metering Class Current Transformer

Features
Maximize revenue metering assembly with very high accuracy class of 0.15% extended beyond IEEE requirements; simplify CT selection and billing multipliers, improving productivity and minimizing risk of error; reduce inventory and part number requirements, reducing asset and operational costs.

The JAK-0S is a revenue metering high accuracy current transformer which maintains IEEE 0.15% accuracy class from 1% of rated current up through its rating factor. This is accomplished using specialized amorphous core material which minimizes electrical core losses. The result is an extremely accurate current transformer that can maintain high accuracy over an extended range of current. This model designed for indoor service but can be mounted inside the outdoor metering enclosures. Optional primary bar kits are available.

Construction
The core and coil assembly is encapsulated in resin within a molded case. The material has excellent electrical and mechanical properties over a wide temperature range, has low water absorption and is resistant to oil and a variety of chemicals. The core is made from high quality grain-oriented silicon steel while the secondary winding is made from heavy enameled copper wire evenly distributed around the core for maximum accuracy and resistance to stray magnetic fields.

Mounting
Low Base – Flex-Core commonly stocks the low base JAK-0S, 750X333012, 600:5A.

Primary Bus Bar Assembly Kits – These are optional and are sold separately from the current transformers. If purchased together with the JAK-0S current transformers, Flex-core will ship these as fully assembled units.

Specifications

- Insulation level of 0.6kV, 10kV BIL
- Frequency 50-60Hz
- Thermal rating factors:
  - 2.0 @30° C ambient
  - 1.5 @55° C ambient
- Window I.D. – 3.062"
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Availability
Flex-Core have adequate quantities in stock of the 750X333012, 600:5A. This high accuracy current transformer has an accuracy of 0.15% from 1% of rated current (6.0A) up to its rated factor of 1200A, which exceeds the IEEE requirements.

Product Details >>

JAB-0C Metering Class Current Transformer

Intended Use
Customers buying these current transformers are distributors and contractors who use these for their industrial and commercial clients that require high accuracy class current transformers for their service metering.

Applications
Designed for indoor or outdoor service and especially designed for installation over the secondary bushings of pad mounted transformers. For revenue metering applications and window opening ID of 4.5” x 3.5”. An 85° C version is available.

Contact Flex-Core for catalog number of the high temperature version.

Construction
The core and coil assembly are encapsulated in resin within a molded case. The material has excellent electrical and mechanical properties over a wide temperature range, has low water absorption and is resistant to oil and a variety of chemicals. Cast units are molded in polyurethane resin and have slightly larger dimensions. The core is made from high quality grain-oriented silicon steel while the secondary winding is made from heavy enameled copper wire evenly distributed around the core for maximum accuracy and resistance to stray magnetic fields.

Mounting
The JAB-0C can be mounted in any position but is usually installed on the pad mount transformer terminal blade using the Valox “grabbers”. The grabbers are removable, and the transformer also has two mounting holes allowing it to be attached to a mounting bracket.

Window opening size – All the JAB-0C units have the same window opening size of 4.5” x 3.5”.

Specifications

- Insulation level of 0.6kV, 10kV BIL
- Frequency 50-60Hz
- Thermal rating factors:
  - 4.0 @30° C for ratios from 100:5A, 200:5A, 400:5A (cast resin units) and non-cast resin units 200:5A, 300:5A and 400:5A
  - 3.0 @30° C for ratio 300:5A, 500:5A, 600:5A, and 800:5A. ratio.
- Rating factors of other ratios are as shown in the data sheet.
- Accuracy – 0.3%.

Availability
Most ratios are in stock and available for immediate shipment. Ratios not in stock require a lead time - call for lead time.

Product Details >>

FLEX-CORE®
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JAB-0S High Accuracy Metering Class Current Transformer

Intended Use
Customers buying these current transformers are distributors and contractors who use these for their industrial and commercial clients that require high accuracy class current transformers for their service metering.

The JAB-0S is a revenue metering current transformer which maintains IEEE 0.15 accuracy class from 1% of rated current up through rating factor. This is accomplished using amorphous core material which minimizes electrical losses. The result is an extremely accurate CT that can maintain high accuracy over a extended range of current.

Applications
Designed for indoor service and especially designed for installation over the secondary bushings of pad mounted transformers. For revenue metering applications and window opening ID of 4.5” x 3.5”. An 85° C version is available.

Maximize revenue metering accuracy with special high accuracy rating extended beyond IEEE requirements

Simplify CT selection and billing multipliers, improving productivity and minimizing risk of error Reduce inventory and part number requirements reducing asset and operational costs

Construction
The core and coil assembly are encapsulated in resin within a molded case. The case is molded with GE Valox thermoplastic polyester resin. This tough material has excellent electrical and mechanical properties over a wide temperature range, has low water absorption and is resistant to oil and a variety of chemicals. A polyurethane resin filling completely encapsulates the windings, leads and terminals to form a waterproof unit.

The core is manufactured with high-efficiency material that reduces energy losses, allowing higher accuracy over a wider range. The secondary winding is made of heavy enameled copper wire and evenly distributed around the core for maximum accuracy and resistance to stray fields from adjacent conductors.

Mounting
The JAB-0S can be mounted in any position but is usually installed on the pad mount transformer terminal blade using the Valox “grabbers”. The grabbers are removable, and the transformer also has two mounting holes allowing it to be attached to a mounting bracket.

Window opening size – All the JAB-0S units have the same window opening size of 4.5” x 3.5”.

Specifications

- Insulation level of 0.6kV, 10kV BIL
- Frequency 50-60Hz
- Thermal rating factors:
  - 2.0 @30deg C and 1.5@55deg C for current ratios 600:5A, 1000:5A and 2000:5A
- Accuracy – 0.15%.

Availability
Most ratios are in stock and available for immediate shipment. Ratios not in stock require a lead time - call for lead time.

Product Details >>

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